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Securing Food Supply by Adapting Millet Growing to Climate Variability: Decision Making Rules of Fulani Agro-pastoralists in Mopti Region, Mali

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Abstract

Climate data show that the Sahel region and its neighbouring regions are exposed to reduction of precipitation and an increase of climate variability that might result from climate change. In the Mopti region, former pastoralists of the Fulani ethnic group have settled after the severe droughts in the 80th of last century. Besides livestock keeping, they increasingly depend on crop production. In both production lines, they have to cope with a high climate variability that is characteristic for this region and have developed strategies to manage their production system in this environment. The study examines production strategies of Fulani agro-pastoralists and their ways of adaptation to climate variability. Four villages in two different ecological zones (Séno and Niger delta) were chosen in order to study the production strategies of the Fulani agro-pastoralists. Data collection had a focus on qualitative methods. The research team lived for two weeks in each of the villages and conducted seasonal calendars (n=8), pairwise ranking (n=2) and open in-depth interviews (n=12). All data collection sessions were recorded with a voice recorder. The interviews were transcribed. The data were first analysed using content analysis. The information provided on management was analysed using a cybernetic analysis tool.

Decision making rules could be identified, including routine action rules, problem solving rules and selection rules. This is shown using the example of sowing millet. The producers make their decisions which variety to sow when and where according to rainfall patterns, soil characteristics, crop rotation schemes, cereal stock, labour and plough availability, and other environmental and individual factors. Problems frequently encountered are interruption of rainfall, high spatial fluctuations in precipitation, and fluctuations in the duration of rainfall which causes high variability in the length of the vegetation period. The results show high flexibility and complexity in management decisions taken by the agro-pastoralist producers. It can be shown that the agro-pastoralists perform their production strategies in order to balance between the objectives of achieving high yields, secure yields and sustain soil fertility.

Keywords: Adaptation, agro-pastoralists, climate variability, food security, Fulani, Mali, millet, Mopti, Peulh, risk management